

REQUEST FOR RECONSIDERATION

Claims 1-20 remain be active in this application.

The claimed invention is directed to a process for preparing autocatalytic polyether alcohols.

Autocatalytic polyether alcohols have been used in the preparation of polyurethanes. Autocatalytic polyether alcohols may contain tertiary amino groups which catalyze the urethane reaction and avoid the use of tertiary amine catalysts which can migrate out of the polyurethane and create an unpleasant odor. Production methods which can avoid significant formation of by-products are sought.

The claimed invention addresses this problem by providing a process for preparing autocatalytic polyether alcohol comprising reacting an H-functional starter substance having at least one catalytically active amino group and as least one group which is reactive with alkylene oxides, with alkylene oxides comprising a step of **dissolving the starter substance in a solvent** and **reacting a solution with alkylene oxides**. Applicants have discovered that reaction of starter substance, which is **dissolved in a solvent**, as a solution with alkylene oxides provides for an autocatalytic polyether alcohol of narrow molecular weight distribution, low by product content and which has low amine emissions when used to prepare a polyurethane. Such a process is nowhere disclosed or suggested in the cited references of record.

The rejections of claims 1-4, 6, 7-18 and 20 under 35 U.S.C. § 103(a) over Schilling et al. U.S. 6,423,759 in view of Waddington et al. U.S. 2003/0100699, of claim 5 under 35 U.S.C. § 103(a) over Schilling et al. in view of Waddington et al. in further view of Maassen et al. U.S. 3,941,769, of claim 7 under 35 U.S.C. 103(a) over Schilling et al. in view of Waddington et al. in further view of Nishioka et al. EP 376,602 and of claims 7, 9 and 19

under 35 U.S.C. 103(a) over Schilling et al. in view of Waddington et al. in further view of Hinz et al. U.S. 5,476,969 are respectfully traversed.

None of the cited references disclose or suggest the claimed process in which an H-functional starter substance having at least one catalytically active amino group and as least one group which is reactive with alkylene oxides is **dissolved in a solvent and reacted as a solution with alkylene oxides**

Schilling et al. describe forming a polyether polyol by **suspending a solid** polyhydroxyl compound in an amine-initiated polyol, **heating the suspension** and alkoxyating **the heated suspension** (see abstract). The amine-initiated polyol is describes as produced by any known method, and generally by alkoxyating the amine initiator, either with or without an alkaline catalyst, until the desired hydroxyl number has been attained (column 3, lines 43-47). The polyhydroxyl compound is normally solid at the processing conditions (column 2, lines 31-35). After the suspension of solid polyhydroxyl compound in the amine-initiated polyol is formed, the suspension is adjusted to a temperature of from 90 to 140°C, followed by alkoxylation (column 4, lines 18-23). A key feature of the reference is the ability to produce a polyether polyol from a solid polyhydroxyl compound without the use of added solvent and without sacrificing any of the product properties (column 4, lines 46-49). Steps of **dissolving** a starter substance **in a solvent** or **reacting a solution** are not disclosed.

In contrast, the claimed invention is directed to a process for preparing an autocatalytic polyether alcohol, by reacting an H-functional substance containing at least one amino group which is catalytically active in the urethane reaction and at least one group which is reactive toward alkylene oxides, by dissolving a starter substance in a solvent and reaction the **solution** with alkylene oxide. Applicants have discovered that dissolution of the starter substance in a solvent provides for a narrow molecular weight distribution and

suppression of secondary reactions. Since Schilling et al. fails to disclose or suggest a step of dissolving a starter substance which has **at least one amino group which is catalytically active** and **at least one group which is reactive toward alkylene oxides** the claimed invention would not have been obvious over Schilling et al.

The official action, on page 3, references “ the initiator mixed with a dissolving material” as meeting the claimed “solvent” limitation. Applicants note that the process of reacting described by the reference at column 4 is that of a **suspension** of solid polyhydroxyl compound in an amine-initiated polyol. Independent of whether the amine-initiated polyol is a solvent as claimed, the process described by the reference in which a suspension of solid polyhydroxyl compound in amine-initiated polyol is alkoxyated with alkylene oxide is not suggestive of the claimed process in which a starter substance is dissolved and a solution is reacted with alkylene oxide.

Waddington et al. is cited as describing the preparation of an autocatalytic polyol and that it would have been obvious to use such an autocatalytic polyol in the preparation process of Schilling et al.

Waddington et al. makes no disclosure of any dissolving step of a starter substance in a solvent or a step of reacting a solution with alkylene oxide. Further, while the reference cites to U.S. 4,605,772 as a technique for preparing alkyl amines of Formula I, there is no disclosure in U.S. ‘772 of dissolving a starter substance in a solvent or reacting a solution with alkylene oxides. In no case does the combination of references suggest **dissolving** a starter substance which is a H-functional starter substance containing at least one amino group which is catalytically active in the urethane reaction and at least one group which is reactive towards alkylene oxides, in a solvent nor reacting a solution with alkylene oxides.

Claim 5

This embodiment of the claimed invention is directed to a process in which the solvent in which the starter substance is dissolved is chemically inert toward alkylene oxides.

Page 5 of the office action has cited to Maassen et al. for a disclosure of toluene as a solvent for conducting alkoxylation. This reference fails to suggest the claim step of dissolving a starter substance in a solvent which is chemically inert toward alkylene oxides, as the starter substance saccharose, is **suspended** in the aromatic hydrocarbon solvent (column 3, lines 13-17). How can a reference suggest dissolving, when the action is clearly described as suspending? Thus, even though described as a solvent, the aromatic hydrocarbon is only used as a suspension aid for the saccharose. Clearly Maassen et al. fails to suggest the claimed steps of dissolving a starter substance in a chemically inert solvent or a step of reacting a solution with alkylene oxides.

While the official action cites to the phrase “without the need to use large quantities of a solvent” in Schilling et al. as justification to include a solvent which is chemically inert to alkylene oxides, applicants note that a description of “without the need” is not a suggestion to use a solvent. To the contrary, the phrase teaches away from using a solvent and furthermore teaches away from steps of “dissolving” or “reacting a solution.”

In contrast, the claimed invention is directed to a process in which starter substance is dissolved in a solvent. As the cited reference fails to disclose or suggest dissolving the starter substance in a solvent or reacting a solution, the claimed invention is clearly not rendered obvious by these references and accordingly withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

Hinz et al. merely describes the preparation of polyoxyalkylene-polyols containing tertiary amino groups. The preparation process is described beginning at column 5, line 22 as by “methods known *per se*”. According to this process, in a first reaction step oxyalkylation is carried out without a catalyst, at atmospheric pressure and from 90-150°C followed by a

second step, if appropriate, by anionic polymerization in the presence of an alkali metal hydroxide catalyst. No solvent is described. In Example 1, starter compound and propylene oxide are reacted in the absence of reporting any added solvent, followed by addition of an aqueous KOH solution. Nishioka has merely been cited for a disclosure of a tertiary amine initiator in the preparation of a polyurethane foam. However, claim 7 is directed to the use of a catalyst in the reaction of starter substance with alkylene oxides (step b), and accordingly the additional disclosure of this reference fails to render obvious the claimed invention. Further, the references fails to disclose or suggest dissolving the starter compound in a solvent.

In view of the deficiencies of the secondary references, the claimed invention is not rendered obvious by the cited combination of references and withdrawal of the rejections under 35 U.S.C. 103(a) is respectfully requested.

The rejection of claim 7 under 35 U.S.C. § 112, second paragraph has been obviated by appropriate amendment.

Applicants have now amended claim 7 to recite “a catalyst.” In view of applicants amendment, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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